Conference Paper

Department of Building and Housing
Te Tari Kaupapa Whare

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authoritative analysis

Estimating the Private Sector Rental Vacancy Rate for Canterbury

Gaining insights from administrative data

An NZAE paper

Palmerston North, June 2012

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Authorship

This paper was prepared at NZIER by Shamubeel Eaqub and at Department of Building and Housing by Julie Loke.

It was quality approved by Kirdan Lees.

We appreciate initial work by James Kerr at the Department of Building and Housing, which this paper expands on.

It was presented at Palmerston North on June 2012 to the New Zealand Association of Economists annual conference.

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1. Introduction

Around a third of New Zealanders live in rental accommodation. These renters and their landlords need a good understanding of market conditions to inform their choices on where to live and where to invest.

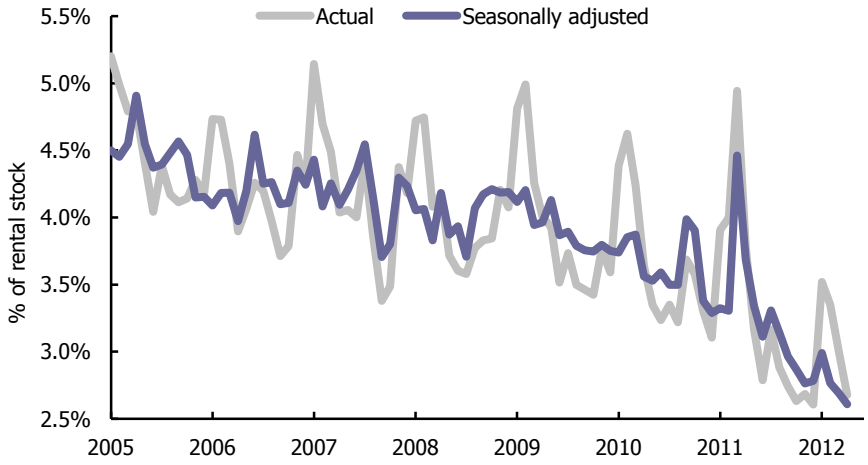
The Department of Building and Housing (DBH) gathers information on private sector rental prices by area and accommodation type. However, there is little available information on rental vacancy rates.

The rental vacancy rate is the fraction of rental properties not rented at a point in time. This captures pressures in the rental market. It matters for understanding the balance between supply and demand, future pressures on rental prices and the typical duration of vacancy for a landlord's budgeting purposes. We have developed a private sector rental vacancy indicator, based on the DBH tenancy bond database.

New Zealand is rare in having a centralised database of tenancy bonds, which provides a rich data set on the rental stock, newly set rent prices and flows in and out of the stock. Internationally, the vacancy rate is typically estimated from a range of sources. In Australia for example, a widely used rental vacancy rate measure is based on advertised rental properties and dated data on housing stock and rental preferences.

We estimate the rental vacancy rate for Canterbury using the DBH tenancy rental bond database. Conceptually measuring the rental vacancy rate is equivalent to the unemployment rate, i.e. those currently unemployed but actively seeking work. In the rental application, it is a rental property currently vacant and seeking a tenant. We therefore utilise the labour market framework to estimate the rental vacancy rate.

Figure 1 Estimated private sector rental vacancy rate in Canterbury



Source: DBH, NZIER

We estimate the rental vacancy rate in Canterbury, Figure 1. The vacancy rate has fallen sharply, accelerating the tightening pressures evident even before the earthquakes. This is consistent with anecdotes and also emerging pressures in the price of rents.

Our estimates of rental vacancy provide a consistent measure of pressures in the rental market. It is based on administrative data that can be updated monthly and can be used to provide a disaggregated regional picture. It will provide timely information for landlords, tenants and policy makers about the state of the rental market, not just in Canterbury by across New Zealand.

2. International experience

Two key methods of calculating rental vacancies are used internationally:

1) Using a survey, such as that used by the US Census Bureau

2) Using measures of advertised rental properties.

To our knowledge, using administrative data on tenancy bonds to estimate rental vacancy is unique.

The US Census Bureau uses a survey (Current Population Survey/Housing Vacancy Survey) to estimate the vacancy rate for both rental and owner occupied homes[1]. It uses the decennial Census to benchmark and revise the estimates. A vacant rental home is a home that is vacant and is advertised for rent. It should be available all year round and not include short term arrangements such as house sitting.

The alternative measure of rental vacancy rate is typically based on the number of advertised rental properties. For example, QSM Research in Australia uses properties advertised online to identify the number of vacant rental properties[2]. They 'clean' the data to isolate unique addresses, to avoid double counting on multiple websites. They then use official estimates of the total housing stock and Census based rental shares to identify the total rental stock and the rental vacancy rate.

In New Zealand, there are no immediate sources of official rental vacancy rate estimates. There are measures of the occupied rental stock from Statistics New Zealand. The most detailed and comprehensive source is the 5 yearly Census. This was delayed in 2011 because of the devastating earthquakes in Christchurch.

Other surveys, such as the Household Economic Survey, have more frequent and up to date information on the proportion of households who rent. These can be used to derive the total number of occupied rental homes. However, it is not possible to distinguish between empty homes that are for owner occupation versus for rent.

The use of online vacancy listings is possible in New Zealand. Two major websites advertise homes for rent: www.realestate.co.nz and www.trademe.co.nz. They tend to aggregate rental advertisements from individual agencies and private rentals and could be used to track the fraction of rental listings against the rental stock. This would complement information in the tenancy bond database and give us a richer understanding of the rental market.

[1] US Census Bureau: http://www.census.gov/hhes/www/housing/hvs/hvs.html

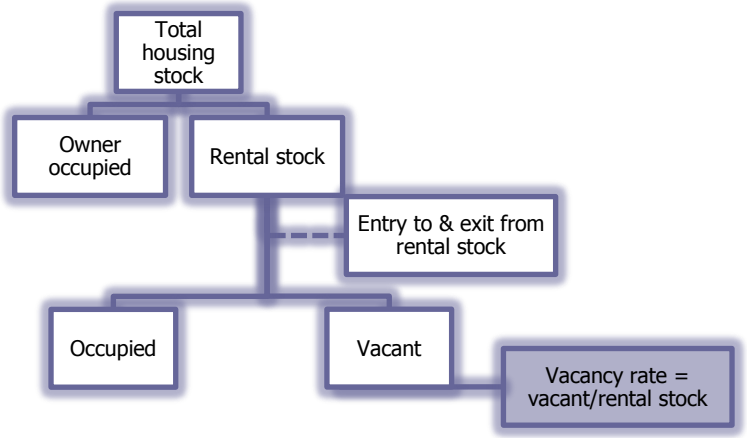
[2] QSM Research: http://www.sqmresearch.com.au/

3. Our approach

We use a novel data source: the DBH's private sector tenancy bond database. It records a number of related variables that we use to estimate the rental vacancy rate.

We use the definitions and the approach of the labour market to calculate the vacancy rate. Figure 2 shows our approach. The rental housing stock is split into occupied and unoccupied homes. Homes also enter and exit the rental stock, as some homes move from owner occupied to rental and vice versa. Newly built homes can also enter into the stock.

Figure 2 Composition of the housing market



3.1 Data

We base the analysis on the DBH Tenancy Bond database only. This gives us a single source of information that is updated regularly and in regional detail.

Table 1 Data sources and their treatment

Rental market concept	Tenancy Bond database metric	Data treatment
Occupied rental housing stock	Number of existing tenancy bonds	The private sector tenancy bond database may not cover the entire rental market. According to the HES data the coverage may be around 66% of all rentals (private and government).
Vacant	Bond refunds that have been re-lodged	This measures how long previously rented homes are vacant. We make estimates for recent missing observations.
Vacant	Newly lodged	Houses that haven't had a bond against them in the past. We don't know how long they were vacant before being rented. We use the vacancy pattern of vacant but previously rented homes to estimate their vacancy status.

Source: DBH & NZIER

3.2 Methodology

What we measure

We measure the private sector rental vacancy rate in the DBH Tenancy Bond database. It is a high frequency measure with the potential to replicate this at a regional level.

We do not count every property in the housing stock and their nature of tenure. Our calculations should be interpreted as an estimate of private rentals.

Putting it together

The vacancy rate is defined as (with all references to rental properties):

$$vacancy\ rate = \frac{vacant\ homes}{rental\ stock} = \frac{vacant\ homes}{vacant\ homes + occupied\ homes}$$

For data up to six months old, we have sufficient observations to calculate the vacancy rate arithmetically, using only assumptions 1 and 2 below.

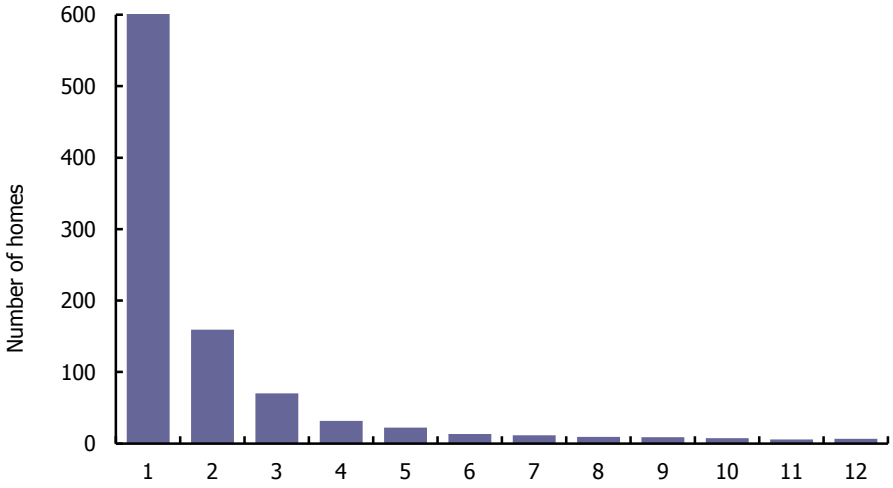
But the number of vacant homes is unobserved in the most recent periods. This is because the time between a refund and re-lodgement available with a delay. We estimate the likely number of vacant homes for the most recent six months based on available data (assumption 3). But these should be used as provisional estimates only.

We make three assumptions to estimate the vacancy rate:

- **Assumption 1.** We focus our analysis on properties that are vacant for up to six months. This typically covers 95% of properties that are vacant for a year (Figure 3). This means our estimates for the latest six months requires the use of estimates, while data before that is calculated using an arithmetic formula. We replicated our analysis with 12 months and 18 months of data. The movements in the vacancy rate did not change, although the level was marginally higher.
- **Assumption 2.** We assume that the new entrants to the rental stock follow the same pattern of time to rent. For example, if there is a new bond lodged this month, we assume say 70% were vacant for one month, 20% for two months and 10% for three months, because that was the pattern for previously rented homes. Alternatively we could use internet advertising data to track the vacancy pattern of new entrants to the rental market.

Assumption 3. We assume that the absorption rate for each cohort is related to younger cohorts. This is useful because younger cohorts have good predictive power and are available with a shorter delay. So if houses are renting quickly for the 3-month vacant cohort, then the 4-month vacant cohort will also rent more quickly in a proportional manner (Figure 3 Vacancy length distribution

2010 average



Source: DBH, NZIER

- Figure 4). We use single equation OLS estimates to relate these variables. We use the following functional form to estimate the latest data points for months 2 to 6:

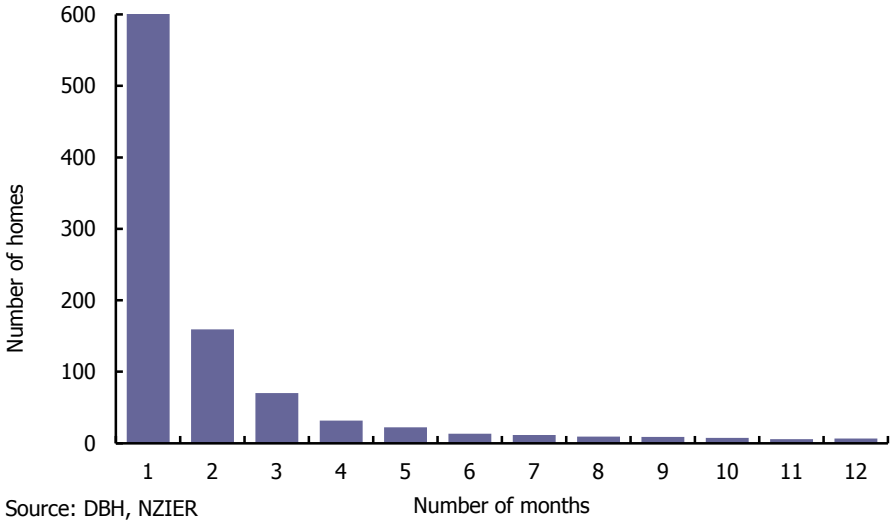
$$X_t^a = f(X_{t-1}^a, X_t^{a-1})$$

Where:

a is the cohort, eg vacant for 3 months and X is the number of vacant homes in each cohort

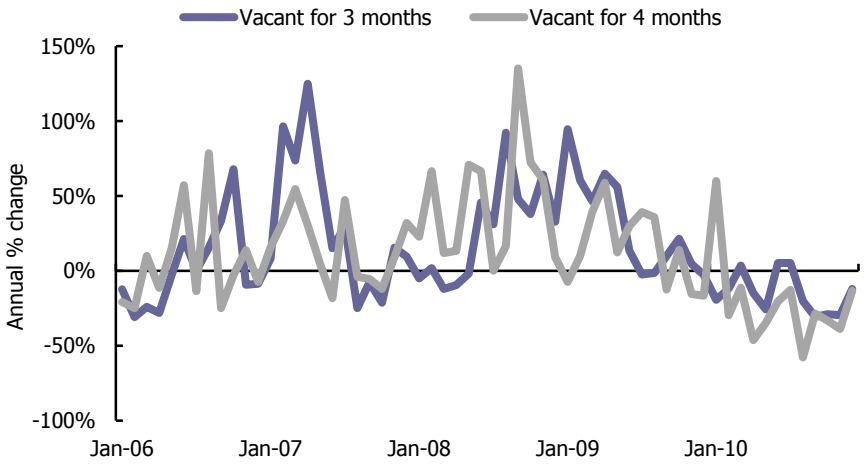
Figure 3 Vacancy length distribution

2010 average



Source: DBH, NZIER

Figure 4 C-movement of two durations of vacancy



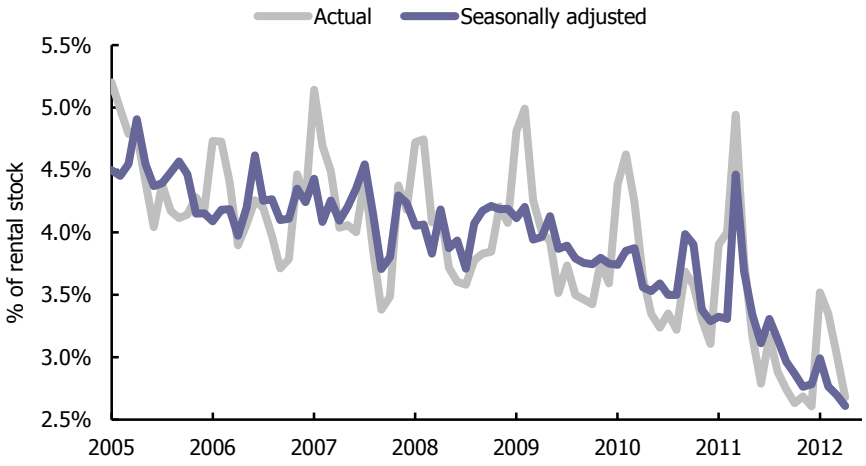
Source: DBH, NZIER

4. Rental vacancy in Canterbury

Our estimate of the rental vacancy rate is a good summary indicator of the rental market. The level of the vacancy rate and the general direction of change lead rental inflation.

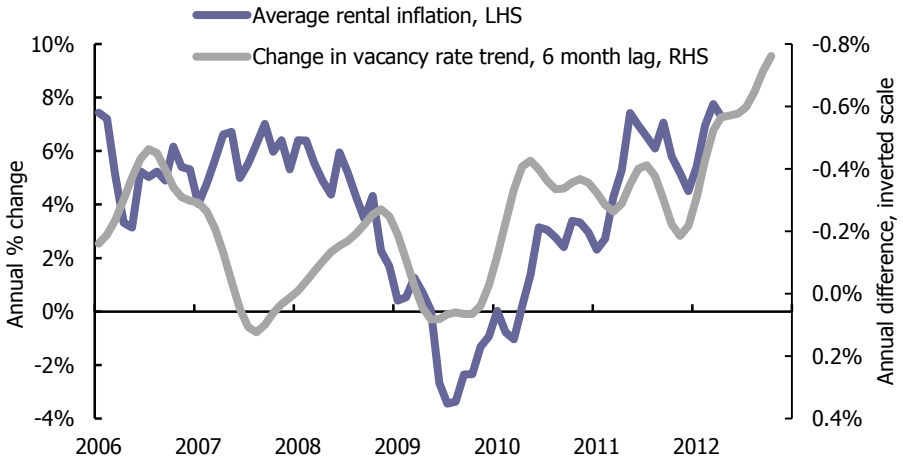
In Canterbury, the rental vacancy rate has slumped following the February-2011 earthquake, which damaged a large number of homes. The vacancy rate averaged 3.6% through 2010, but it was just 2.7% in April-2012 (seasonally adjusted, Figure 5). The tightening rental market appears to be lifting rental prices (Figure 6). But there are also periods of rising inflation when the vacancy rate is easing, meaning we need to understand the interaction between demand, supply and prices for a full picture of rents.

Figure 5 Rental vacancy rate in Canterbury



Source: DBH, NZIER

Figure 6 Rental inflation vs change in the vacanacy rate

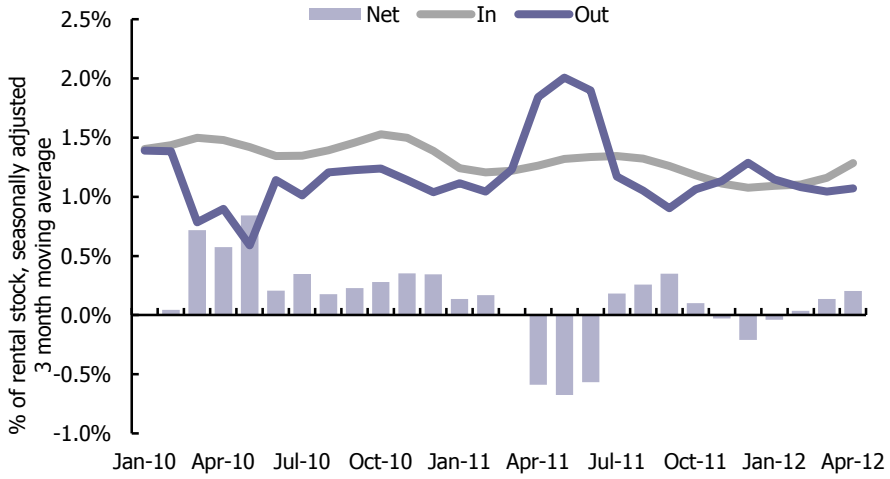


Source: DBH, NZIER

We also analyse the flows into and out of the rental market to understand the source of pressure. In Canterbury, the earthquake led to a loss of property which meant a number of rental properties exited the rental stock. The outflow was intense in the two months following the earthquake, in March and April of 2011.

Outflows accelerated again in late 2011, possibly reacting to increasing demand for housing and rising house prices. But inflows have been trending higher thus far in 2012, perhaps responding to rising rental prices. These statistics provide important insights into the workings of the rental market in Canterbury.

Figure 7 Monthly flows in and out of the rental stock



Source: DBH, NZIER

5. Conclusion

Vacancy rates capture important information across a spectrum of applications, including the balance between supply and demand, future pressures on rental prices and the typical duration of vacancy for a landlord's budgeting purposes. We have developed a rental vacancy indicator, based on the DBH tenancy bond database.

Our estimates of rental vacancy will provide a consistent measure of pressures in the rental market. It is based on administrative data that can be updated monthly and can be used to derive rich regional disaggregation. It will provide timely information for landlords, tenants and policy makers about the state of the rental market.

In future work we will look to expand this analysis to other regions and a national measure. We will also look to stress test our findings against other sources of data (particularly from internet listings), to ensure our estimates are robust.